

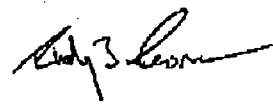
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Spokane Tribal Natural Resources

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To: Kevin Rochlin, RPM-UCR

From: Rudy I. Peone, Director STI-DNR 

Date: January 18, 2005

Subject: Spokane Tribe Comments on "DRAFT Phase I Sediment Sampling Approach and Rationale Upper Columbia River Site CERCLA RI/FS, December 10, 2004"

Kevin,
Please review and distribute the attached AESE, Inc comments on behalf of the Spokane Tribe.
Thank You
Rudy

USEPA SF



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MEMORANDUM

TO: Rudy Peone, Director
JSK

FROM: Dr. F. E. Kirschner, Senior Scientist

DATE: January 18, 2005

SUBJECT: Comments on "DRAFT Phase I Sediment Sampling Approach and Rationale Upper Columbia River Site CERCLA RI/FS, December 10, 2004"

CC: Chairman Wynecoop
Randal Connolly
Shannon Work
File

This memo constitutes a review of the aforementioned document. In preparing these comments, the Tribe has attempted to focus on issues that could make a difference in the RI/FS and ultimately selection of the remedy in the Preferred Plan. Typically, the Tribe would provide a list of General and Specific comments; however, in light of EPA's compressed timeframe and need to move ahead (Attachment 1), the Tribe has focused only on General Overarching Comments. Note that we have found several locations in which dimensions are incorrect.

General Overarching Comments:

1. Comments provided by the Tribe on July 12, 2004; October 11, 2004; and November 30, 2004 have not been addressed. These comments and concerns remain (See Attachments). The Tribe requests a prompt response.
2. EPA has reported to the Tribe that the sediment study will be used to determine the nature and extent of contamination, provide insight on contaminant transport and fate, and aid in identifying alternatives for the FS. EPA has repeatedly told the Tribe:

“sampling required to support human health and ecological risk assessments will occur in a later phase.”

The NCP requires systematic, result-driven, study designs that ultimately lead to remedies that are protective of human health and the environment AND comply with ARARs (as well as the other remedy selection criteria). Based on existing sediment data (data that were not necessarily sampled to be consistent with Tribal ARARs), at least one chemical-specific ARAR has been exceeded at all locations. This means that the probability that the entire reservoir system requires a CERCLA response is very high.

This sampling event should focus on characterizing exposure areas for human health and the environment. The Tribe has provided its recommendations for characterizing several types of exposure areas for humans (see Attachment No. 2). These recommendations still stand.

Along these same lines, as early as July 11, 2004, the Tribe expressed concerns that this process was not following the logical progression required to protect human health and the environment (See Attachment No. 3). Again these concerns still remain.

The Tribe recommends that the Data Quality Objectives process be re-opened to all governmental stakeholders—not just EPA and its contractors. Many statements, below, pertaining to misconceptualizing the problems at hand derive from this subject—lack of understanding and proceeding without a well thought-out plan. In summary, the majority of the DQOs section of this report is still inadequate.

3. Analysis of existing data indicates that the COCs measured in fine sediments of the reservoir are a consequence of the historical liquid-phase releases from the Cominico Metallurgical Complex—not the smelter slag. It has come to our attention that the USGS also attribute the release to the liquid-phase—not releases of slag. In short, given the large amount of credible data available for this site, EPA has still

misconceptualized the release mechanism and transport and fate of COCs responsible for downstream contamination. The implications of this scale of misconceptualization is as follows:

- A. In accordance with the USGS findings, the slag-based rationale used to support and subsequently design the entire sampling approach is incorrect.

Incorrectly conceptualizing the release as described above, has resulted in the erroneous assumption that downstream sediments have been contaminated with solids associated with downstream transport of slag. Although this process has indeed occurred, several lines of evidence indicate that the majority of COCs that have been released to the entire basin are attributable to liquid-phase discharges—not solid-phase slag. The Tribe was led by EPA and its contractors to believe that the distribution of COCs in sediments is dominated by particulate transport. Variations in such transport would necessarily result in large variation in COCs within each depositional layer (see Attachment No. 3; discussion on varves).

A recent review of the data by the Tribe indicates otherwise. Although, sediment transport is significant in the areas upstream of Marcus flats, transport within the remainder of the reservoir is likely dominated by dissolved and suspended colloid size particulate transport (probably sorbed onto plankton). Transport of this nature will, in general, result in a much more uniform blanket-like deposit. The relatively small variance in COCs, measured in sediment data for the reservoir, indicate that that this type of transport/deposition is occurring (and has been occurring) in the reservoir. It is probably enhanced by the presence of clay minerals eroding from the bedrock within the basin. This mechanism of transport is better observed in the USGS dataset that correctly used a particle size cut-off to minimize variability. Variations within each annual "blanket" or varve will become less noticeable due to diffusional exchange between layers.

In short incorrectly conceptualizing the process leads to incorrectly identifying the number, types, and locations of samples required to characterize a given area or volume of media.

- B. Incorrectly attributing the release to the slag has resulted in erroneously omitting some very important contaminants of interest. Most importantly are radionuclides of the U^{238} decay chain. cursory review of USGS sediment data indicate that total uranium (measured by ICP-MS) is elevated above typical background concentrations. The source of U^{238} and its daughters is:

likely associated with historical direct discharges from the fertilizer plant which ended in 1994. Discussions between the Tribe and EPA and brief analysis of the metallurgical complex indicate that a tailings pond was not associated with the phosphate fertilizer plant. Therefore, tailings from the acidulation process were probably directly discharged into the river. Such tailings are notorious for containing technologically enhanced natural occurring radioactive materials (TENORM). Daughters of the U and Th decay chains are likely risk drivers to the Tribe—especially when concentrated in plant materials or in surface or ground waters used during sweat lodge activities (Attachment No. 3); and

- C. Any remedy that focuses solely on removal of the slag will not effectively reduce downstream concentrations of COCs measured in sediments. The two sources and transport mechanisms are effectively uncoupled.
4. Another overarching misconception is that direct exposure to sediments, is the main pathway for bioconcentration of COCs in macroinvertebrates or fish. All evidence points to the sediment-to-surface-water-to-receptor pathway—not sediment-to-receptor pathway (Figures 1 and Figure 2). This impact to biota from this pathway is probably in the boundary layer identified in Figure 1. If EPA decides to investigate chemisorption and liquid-phase diffusional transport within the basal surface boundary layer (Figure 1), then the Tribe recommends that a time weighted average type passive membrane sampler be used (Attachment No. 5). The cost of such sampling is greatly reduced of that which focuses on sampling sediments and provides data that are more relevant to the problem at hand. The TWAPMS can serve as a model for all of the benthic biota.
 5. It appears that the project would greatly benefit by involving practicing geologists and hydrogeologists to the project team. The geology of the area is fairly complex (Figure 3). The non-site related COCs issuing from the landscape also must be considered during determination of background. An understanding of the geology is currently lacking in this draft and has not been considered in the DQO's stage nor the sampling design stage. Geology is central to the problem at hand.
 6. The data quality objectives section is non-specific and is of very little technical use. It further demonstrates the degree at which this project has been planned and the degree to which existing data have been used to inform and design these studies. The DQO statements of Table 5.1 are inexact and inappropriate. Two example statements have been provided in Table 1-3. The statements should specify the problem and the criteria used to make the requisite decision. Generic problems with the current statements are identified in Table 1. Table 2 provides another example of a Preliminary DQO Statement that is inadequate due to lack of specificity. Table 3 provides a suggested format.

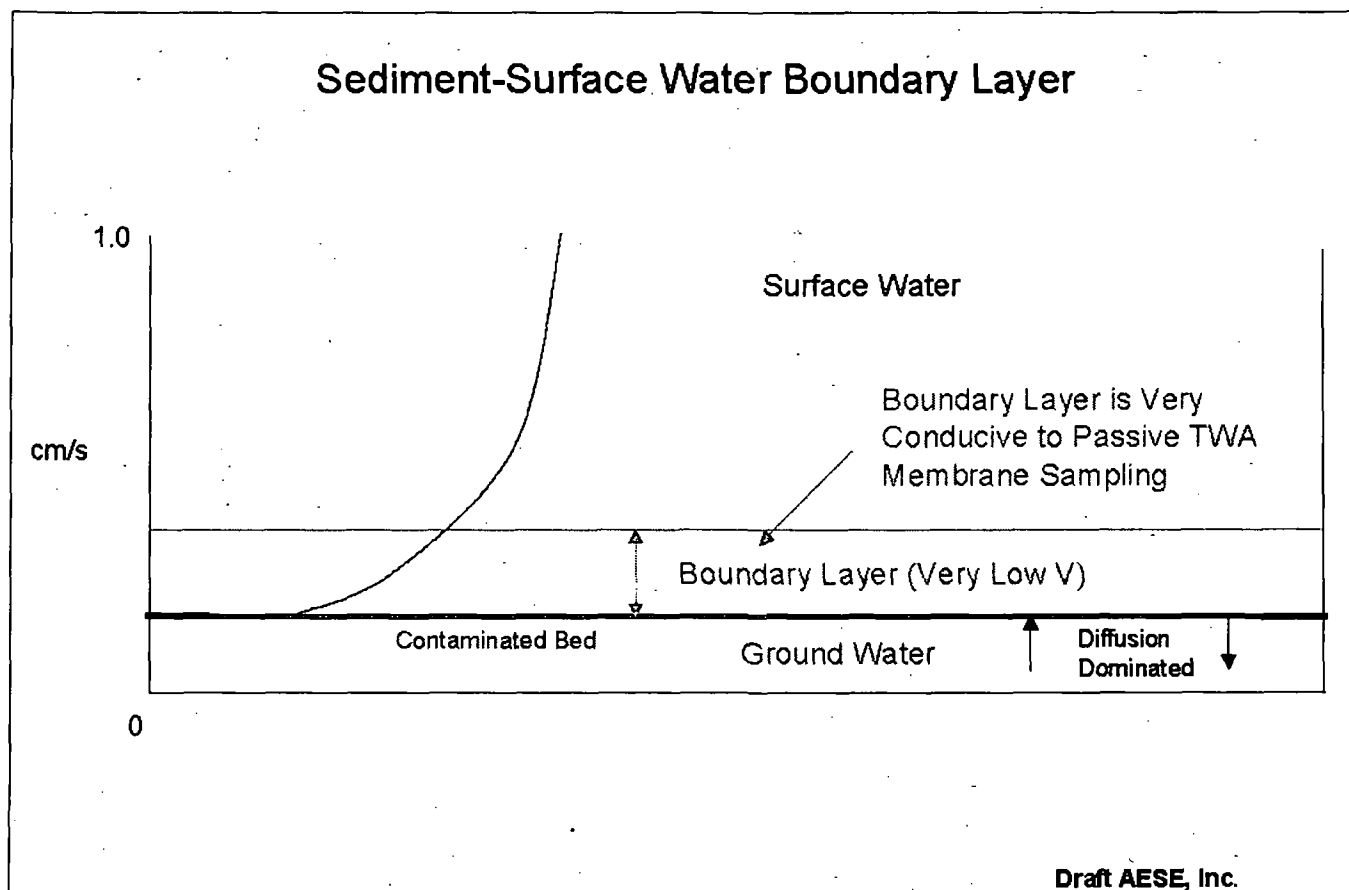


Figure 1. Conceptualized Low Velocity Boundary Layer Near the Sediment Surface Water Interface.

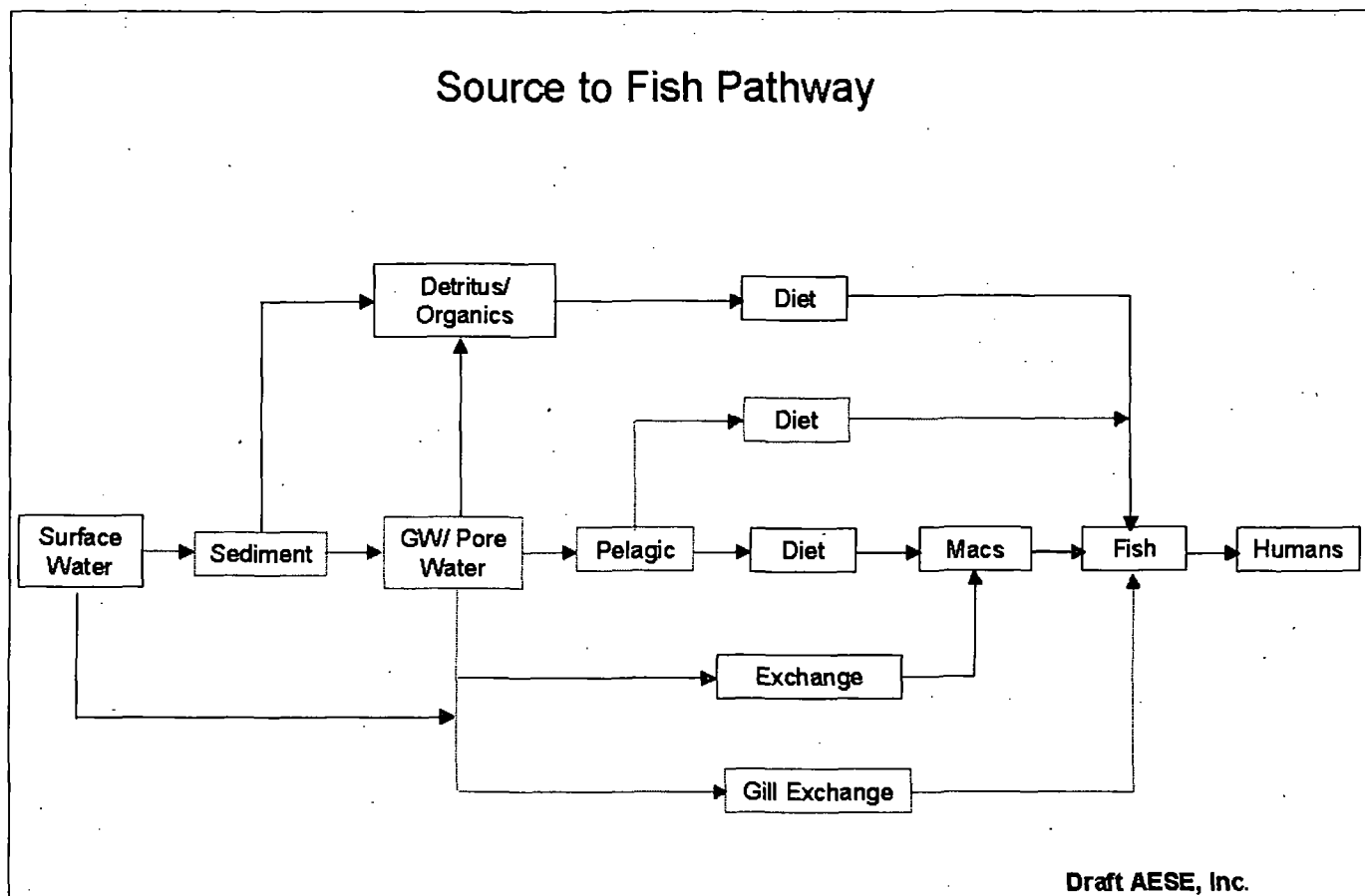


Figure 2. Conceptualized Model for the Surface Water to Fish Pathway.

Table 1. EPA's Table 5.1 DQO's

Item	Problem Statement	Decision to Be Made	Inputs to the Decision	Decision Rule	Statistical Criteria	RI Tasks
1	The spatial, temporal, and chemical representativeness and the quality of historic surface sediment data are currently unknown . As a result, data gaps in the nature and extent of contamination may exist.	Decide whether historic data are useable and sufficient to reliably characterize risk and develop remedial alternatives (if needed).	<ul style="list-style-type: none"> • Historic surface sediment analytical data • Results of evaluation of spatial, temporal, and chemical representativeness and quality of historic data 	If insufficient data exist to reliably characterize risk and develop remedial alternatives (if needed), then data gaps will be identified and needed data collected.		<ul style="list-style-type: none"> • Evaluation of spatial, temporal, and chemical representativeness and quality of historic data • If data gaps identified, collect surface sediment samples where data gaps exist.

(Note that the Criteria in **Bold** have not been developed and should have been developed by the expert in the specific discipline very early within the process. Also note that historic data should have been used to inform the design of this study.

Table 2. Another Example of Poor Preliminary DQO Statement

Item	Problem Statement	Decision to Be Made	Inputs to the Decision	Decision Rule	Statistical Criteria	RI Tasks
1	Can we estimate risk to human health and the environment, determine compliance with ARARS, and fulfill needs of the remaining 7 remedy selection criteria of the NCP?	Do we have enough data to solve the problem?	• Historic data and "professional" judgment	If insufficient data or judgment exists to reliably characterize risk and develop remedial alternatives (if needed), then data gaps will be identified and needed data collected.	Not Applicable	Develop the Record of Decision (ROD)

Table 3. Suggested Example of Preliminary DQOs

Item	Problem Statement	Decision to Be Made	Inputs to the Decision	Decision Rule	Statistical Criteria	RI Tasks
1	Characterization of Sediment in EA "x" for macroinvertebrate Population "y"	Is the dataset of sufficient quality and quantity to Characterize the Population in Boundary in Area "x"	Existing Datasets: WADOE, USGS, NPS, EPA, CTCIR	If data meet the acceptable statistical criteria, then stop. If it does not, then datagap must be filled via sampling	$\alpha = 0.05$; $\beta = .9$	Characterization for BSLERA
2	Characterization of Sediment in EA "a" for Human Population "b"	Is the dataset of sufficient quality and quantity to Characterize the Population in Boundary in Area "x"	Existing Datasets: WADOE, USGS, NPS, EPA, CTCIR	If data meet the acceptable statistical criteria, then stop. If it does not, then datagap must be filled via sampling	$\alpha = 0.05$; $\beta = .9$	Characterization for BSLERA

Note that this statement specifies the evaluation criteria BEFORE work begins. These types of decision statements are the basis for the "blue-prints" of the study. Moving ahead with the previous DQO statements (Tables 1 and 2) is akin to contracting to build a house without understanding the needs or wants of the client.

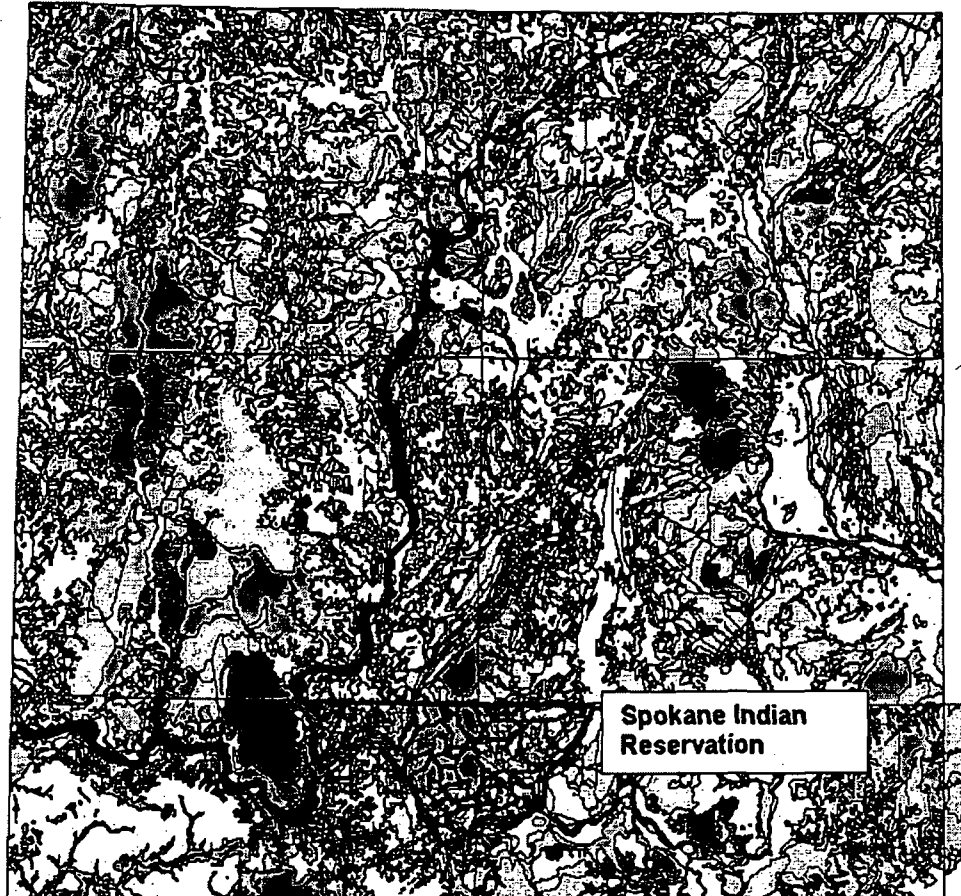


Figure 3. Generalized geologic map of the project area. Note that alluvial units have been combined in this figure in order to “simplify” the problem.

Attachment No. 1.

January 12, 2004 E-mail from Kevin Rochlin (EPA) to Fred Kirschner (STI)

Return-Path: <Rochlin.Kevin@epamail.epa.gov>
X-Original-To: fredk@icehouse.net
Delivered-To: fredk@icehouse.net
Date: Wed, 12 Jan 2005 16:04:23 -0800
From: Rochlin.Kevin@epamail.epa.gov
Subject: Cancellation of Conference Call
To: fredk@icehouse.net (Fred Kirschner), connolly@spokanetribe.com
Cc: Thomas.Sally@epamail.epa.gov, Tonel.Monica@epamail.epa.gov,
Steiner-Riley.Cara@epamail.epa.gov
X-MIMETTrack: Serialize by Router on EPAHUB11/USEPA/US(653HF66|November 02,
2004) at 01/12/2005 07:04:25 PM
X-Scrubber-ClamAV: clean

Thank you Fred's clarifying that you were looking for an all day meeting with EPA and its contractors to discuss the Spokane Tribe's comments on the sediment sampling proposal. EPA cannot meet the Tribe's request.

For the following reasons, I request that the Spokane Tribe submit its comments in writing:

First, EPA asked that all the stakeholders provide their comments to us by January 7, 2005 to enable us to address comments and be able to meet the extremely tight schedule needed to be out in the field in April. You suggested that you be able to provide verbal comments to us. This does not work because if we rely on your comments to make any substantial changes, the other stakeholders will need to understand the basis for the changes. We also want them to be on the record so that the Tribe can be assured that its concerns have been understood by EPA.

Second, EPA and its contractors are on an expedited schedule to perform the work that we have stated we would perform this year. We want to use our time and that of the stakeholders efficiently and productively. We feel that this will best occur if you provide your comments to us on a timely basis.

I look forward to receiving your comments.
Kevin

AESE, Inc.

01/18/05

Attachment No. 2

July 12, 2004 Memo to Cammi Grandinetti, EPA-RPM UCR-RI/FS from Dr. F. E. Kirschner, Senior Scientist, Representing the Spokane Tribe of Indians

AESE, Inc.

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TRANSMITTAL MEMORANDUM

TO: Cammi Grandinetti, EPA-RPM UCR-RI/FS
JSK

FROM: Dr. F. E. Kirschner, Senior Scientist, Representing the Spokane Tribe of
Indians

DATE: July 12, 2004

SUBJECT: Review of *Draft "Annotated Outline, Upper Columbia River RI/FS
Workplan* June 30, 2004, Prepared by CH2MHill and Ecology &
Environment for the EPA

CC: Rudy Peone
Randy Connolly
Jim Stefanoff
File

This memo constitutes a review of the aforementioned document. In preparing these comments, the Tribe has attempted to focus on issues that could make a difference in the RI/FS and ultimately selection of the remedy in the Preferred Plan. In places, conflicts in logic also have been identified. General comments are followed by specific comments.

General Comments

1. The sequence depicted in the outline is not in logical order. Figure 1 is a flowsheet for the generalized RI/FS process. Some of these important steps or requirements have been overlooked or have been omitted.

Sequence of events should be as follows:

- A. Develop the preliminary CSMs for: (1) Contaminant Transport & Fate (CT&F); (2) ecological exposure; and (3) human exposure. These are separate devices and are usually compiled for each OU (especially if each OU or other management unit is defined geographically).

The CT&F PCSMs and the Ecological Exposure CSMs can probably be developed today; however, the human exposure CSMs will need to be informed by human health risk scenarios developed for the Tribes (note that the Spokane Tribe has a HH exposure scenario developed for the Midnite Mine). A short discussion on HH exposure scenarios and their uses follows:

An exposure scenario is a representative portrayal of the interactions between human and/or ecological receptors and their immediate environment. Exposure scenarios include development of exposure factors required to estimate dose to the target receptor. For Tribal applications, the scenario may reflect traditional subsistence lifeways, or a current lifestyle that combines traditional and modern activities and foods related to a localized area.

The Spokane Scenario identifies general exposure pathways specific to the Spokane lifestyle, and key resources that the Spokane people use from the area affected or potentially affected from the mine site. It includes the activities that Spokane members undertake during their residence on nearby allotments, their food acquisition (hunting, gathering, fishing, pasturing livestock, and gardening with irrigation) on and off their allotments, as well as activities associated with their cultural heritage and identity (for instance: gathering basket-making materials, pit cooking, and ceremonial uses of places or resources affected by the mine).

The Scenario, along with knowledge of contaminant transport and fate, are the bases of the Conceptual Site Models (CSM) and the Reasonable Maximally Exposed Individuals (RME). **CSMs are visual accounting tools used to develop work plans for site characterization activities such as:** (1) identifying or verifying contaminants of concern; (2) determining the nature and extent of contamination by identifying culturally relevant and ecologically important natural resources; (3) development of sampling plans for media and biota; and (4) evaluation of existing data. The scenario will also aid in developing and reviewing: (1) the plans for the screening-level and full risk assessments; (2) the draft screening-level and full risk assessment documents after they are prepared; and (3) remedial goals and objectives (what risk level will be achieved). Ultimately, the

Scenario also can be used to determine residual risk once the remedy has been completed.

The approach to developing this site-specific scenario starts with a general description of the local ecosystem where people live or will return after cleanup and use the resources (Note that some of these resources are being used today even though they are known to be contaminated). A general understanding of what people do there and what resources are available for their use provides the basis for developing preliminary exposure factors. The Scenario describes things that traditional people do to survive or subsist in the local ecosystem include hunting, gathering foods and medicines, fishing, making material items, farming or gardening, raising livestock, irrigating, and various cultural activities. *Subsistence means living off the land, or obtaining most necessities directly from the land, rather than working for money to purchase them.*

Exposure factors for direct exposure pathways include exposure to biotic and abiotic media (air, water, and soil), resulting in inhalation, soil ingestion, water ingestion, and dermal exposure. Biotic-related pathways include food, medicine, tea, and materials. There are many unique exposure pathways that are not accounted for in scenarios for the general public, but may be significant to people with certain traditional specialties such as pottery or basket making, flint knapping, or using smoke, smudges, paints and dyes.

B. Once all of the PCSMs have been prepared, an exhaustive list of studies are developed to determine pertinent parameters such as transfer rates between "boxes" on the PCSM (e.g. flux between ground water and surface water, sediments to air, etc. in all locations represented by the CSM). This exhaustive list of studies identifies the Data Needs and subsequent Data Quality Objectives.

C. Existing data are then compared to the data Needs and DQOs. Figure 2 has been included to demonstrate this process. Shortfalls in this exercise are termed **data gaps**. Note that this step in the process as described here occurs immediately *after* the studies have been designed and before the data have been reviewed.

D. Studies are designed to fill the data gaps are then prioritized and marshaled as necessary.

2. The title is confusing in that it indicates that this document is an "annotated outline" of the RI/FS *workplan* when in fact it is more of a hollow or empty outline of an RI/FS—not a "workplan" designed to fulfill requirements of the RI/FS. Webster defines "Plan" as "*a detailed formulation of a program of action.*" This document does not come close to meeting this definition. In its current form, the plan does not identify necessary goals, objectives, timeframes or milestones (e.g. Gant chart) and therefore, does not serve for future planning purposes (i.e. is not even a good plan on how to write future plans that ultimately are directed at meeting long-range goals). For example, the required level of detail for each section is not specified.

In short, the actual workplan will focus on filling-in this outline of an RI/FS—not the outline of a workplan. In order to clarify the intent of this document, the Tribe recommends that "workplan" be dropped from the title.

Also after reviewing the RI/FS outline, the Tribe Strongly recommends that each the ultimate RI/FS document be constructed in a modular format consisting of numerous sub-documents/deliverables—not as it is portrayed here as one very large document.

3. The rationale and need for producing this document is not clear. It seems that most of this document parrots "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (1998) which is routinely relied upon by RPM when conducting RI/FS. If this document differs from the RI/FS guidance, please indicate to the Tribe where this occurs.
4. Premature conclusions are presented. Such conclusions do not appear to be necessarily correct (See Specific Comment No. 8, below).

Specific Comments

1. Page 3-3:

As discussed in General Comment No. 1, above, the DQO/Data Needs/Data Gaps section should be before "Preliminary Nature and Extent of Contamination"

2. Section 3.3 Potential ARARs:

This section is typically reserved for the later portions of the FS stage and should be moved farther back in the sequence (Note that ARARs are not crystallized until the ROD).

3. Sections 3.4 PRGs; 3.5 Preliminary Response Action Alternatives; 3.6 Treatability studies:

Like ARARs, these items are way too early in the sequence. For this site, which involves two Native American Tribes, typical PRG's/RAOs/ARARs will not be protective. Therefore, any sample designs based on the attainability of PRG's/RAOs/ARARs that are designed to protect the general population will not be applicable here (i.e. any study that uses these "standards", designed for the general population, to falsely and incorrectly screen-out COCs, media, pathways, or exposure areas) and will only complicate matters later on in the process when the BHHRA has been completed and it is "discovered" that ARARs, PRGs, and PRAOs are not protective of the Tribes.

4. Section 3.7

See General Comment No. 1. The technical working group must first determine what data are needed, prior to identifying "data gaps".

5. Section 5.1.1 Sentence No. 1:

"....assimilating historic data..."

"Assimilating" implies manipulating or re-interpreting the data (synthesis). The Tribe recommends using "compile or compiling the data."

6. Section 5.1.1; Item No. 5; Paragraph 2:

This section describes some types of data gaps

7. Section 5.2 Field Investigations:

This section should be devoted to "filling" previously defined data gaps (see Figure 2, below).

8. Section 5.2.6 Last Paragraph:

"The approach for sediment sampling in the UCR will consider a higher sampling density in the Northport and Upper Lake Roosevelt reaches, and a lower sampling density in the Mid and Lower Lake Roosevelt reaches. The approach will also consider the establishment of transects within each reach to evaluate variability across the river and reservoir (e.g., left bank, right bank, and mid-channel areas). Preferential sampling of depositional areas might be conducted in the upper reaches of the UCR. Identification of depositional versus erosional areas is expected to require a better understanding of hydrodynamic, bathymetric, and sediment transport considerations."

It is way too premature to draw conclusions as is done herein without first developing the appropriate experimental design that will meet the requisite DQOs. Also, higher sampling densities will probably be required in areas exhibiting a relatively higher coefficient of variation. Such areas are like to be located distally from the source.

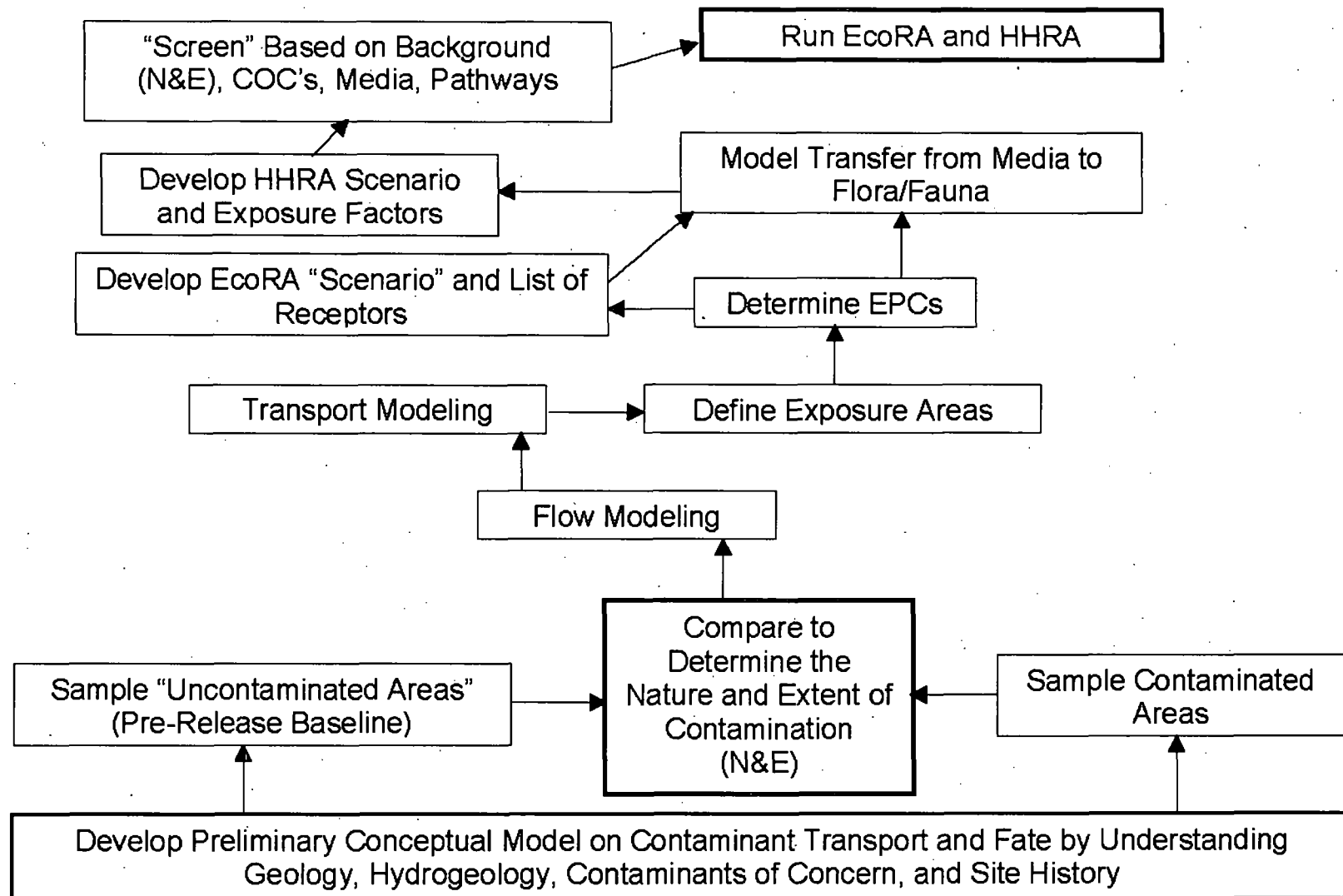


Figure 1. Generalized CERCLA process.

AESE Inc.

07/12/04

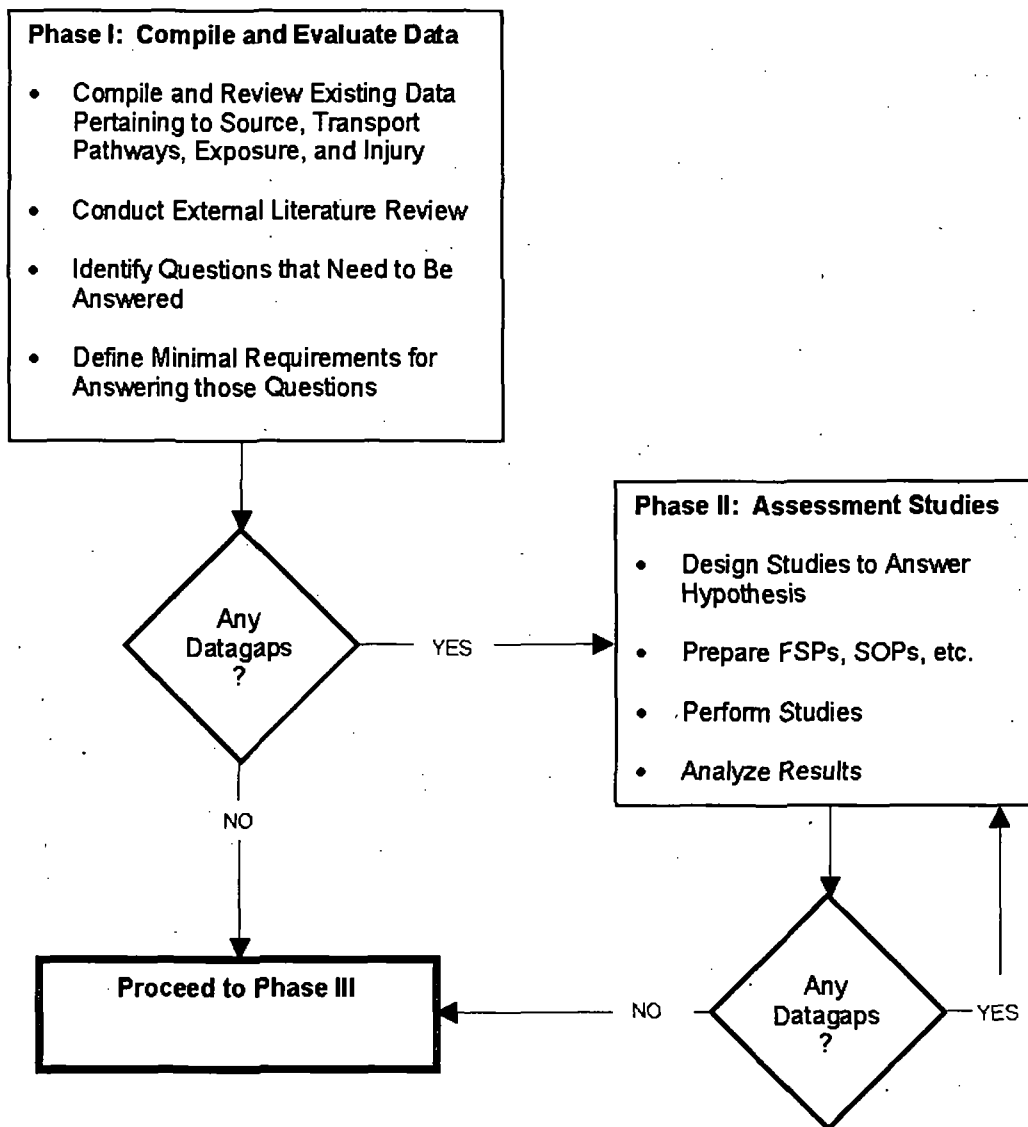


Figure 2. Phased assessment approach.

Attachment No. 3

October 11, 2004 Memo to Kevin Rochlin and Sally Thomas, EPA, UCR-RPMs from Dr. F. E. Kirschner, Senior Scientist, Representing the Spokane Tribe of Indians